Virtualized research architecture
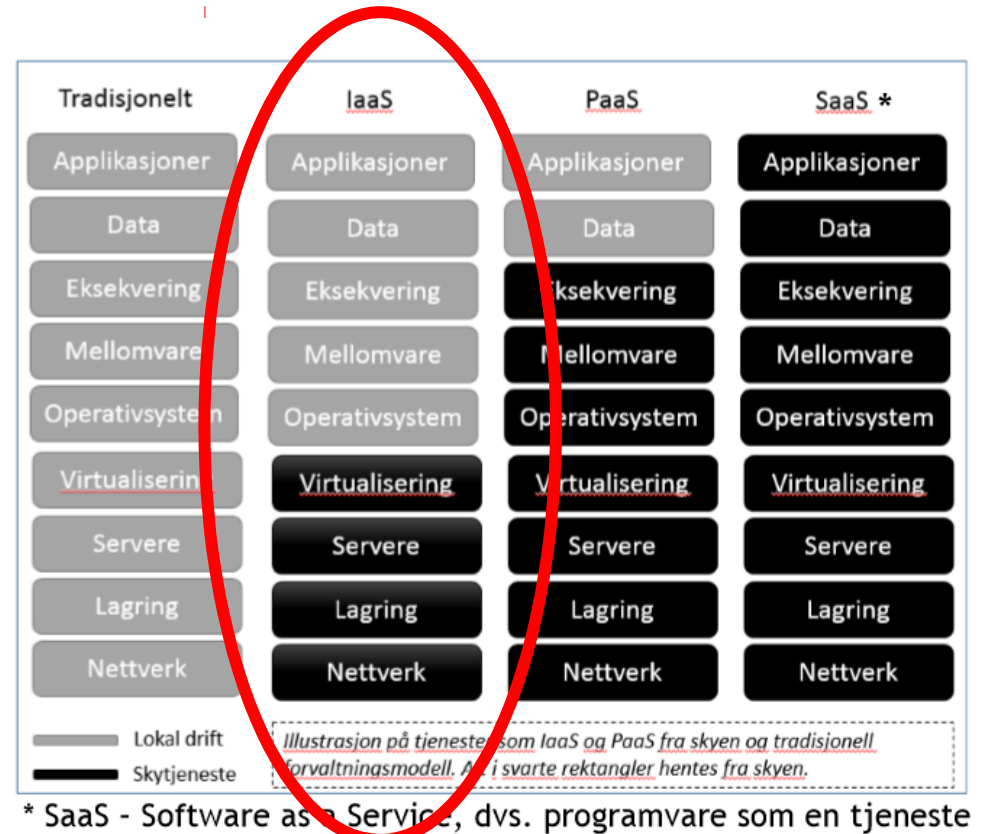
Arnstein Orten

National strategy

➢ Cloud services should always be considered
➢ And chosen where they are cheapest and most expedient

➢ Information security must be catered for

Kommunal- og
moderniseringsdepartementet

Strategi

Nasjonal strategi for bruk
av skytenester

UNINETT

Cloud technology and services

- The Cloud Computing concept refers to physical components, software, services, business models and delivery models.
- It represents a paradigm shift for production, distribution and use of IT services
- Example: Infrastructure as a Service (IaaS) – buy datacentre functionality over the Internet instead of investing locally.

Tradisjonelt	IaaS	PaaS	SaaS *
Applikasjoner	Applikasjoner	Applikasjoner	Applikasjoner
Data	Data	Data	Data
Eksekvering	Eksekvering	Eksekvering	Eksekvering
Mellomvare	Mellomvare	Mellomvare	Mellomvare
Operativsystem	Operativsystem	Operativsystem	Operativsystem
Virtualisering	Virtualisering	Virtualisering	Virtualisering
Servere	Servere	Servere	Servere
Lagring	Lagring	Lagring	Lagring
Nettverk	Nettverk	Nettverk	Nettverk

Lokal drift

Skytjeneste

Illustrasjon på tjenester som IaaS og PaaS fra skyen og tradisjonell forvaltningsmodell. Alt i svarte rektangler hentes fra skyen.

* SaaS - Software as a Service, dvs. programvare som en tjeneste

Why choose cloud services?

- Very fast to set up
- No cost to set up a small instance
- Easy scaling
- IaaS: Flexibility
- ...

You can
do it yourself !!!

Now.

OpenStack sector suppliers

OpenStack: a free and open-source software platform for cloud computing, mostly deployed as IaaS. https://www.uninett.no/sky :

- Safespring
- UH-IaaS

Azure
IaaS / EU, Rammeavtale / Microsoft

Printix
IaaS / EU, Brukes i offentlig sektor / Printix.net ApS

Safespring Compute
IaaS / EU, Databehandleravtale, Rammeavtale / Safespring

UH-IaaS
IaaS / Norge / UiB

UH-sky: OpenStack IaaS

- Set up CLI
  - Install openstack command-line interface
  - Log in on web GUI to get the API password
  - Set up CLI
- Use CLI
  - Make a machine
  - Log in on the machine
  - Attach storage
  - Make a new machine and move the storage to that machine
- Play around
  - E.g. install a graphical software package
  - Or install a web server
  - Or install your workflow tools

My lesson notes are at

https://arnsteio.github.io/UH-IaaS-mini-workshop/

Install command-line interface

- Windows:
  - Install Python.
  - Ensure that Python directory is defined in the PATH environment variable, then run (as admin):
  - C:\>pip install python-openstackclient
  - Docs at e.g. https://github.com/naturalis/openstack-docs/wiki/Howto:-Installing-and-configuring-the-OpenStack-commandline-tools-on-Windows
- Linux
  - apt-get install openstack-cli
  - or
  - apt install python3-openstackclient
  - or
  - apt install python-dev python-pip
  - pip install python-openstackclient

Get API password

- Go to https://access.uh-iaas.no/ and log in.
  Write down the API password!

Set up client interface

arnsteio@☠:~$ cat keystone_rc.sh

export OS_USERNAME=arnstein.orten@geo.uio.no

export OS_PROJECT_NAME=DEMO-arnstein.orten.geo.uio.no

export OS_PASSWORD=<API-password-from-1st-login>

export OS_AUTH_URL=https://api.uh-iaas.no:5000/v3

export OS_IDENTITY_API_VERSION=3

export OS_USER_DOMAIN_NAME=dataporten

export OS_PROJECT_DOMAIN_NAME=dataporten

#export OS_REGION_NAME=bgo

export OS_REGION_NAME=osl

export OS_NO_CACHE=1

Why not use cloud services?

- Compliance issues. Data protection
- Legacy systems
- SaaS / PaaS: inflexibility
- Uncertain costs
- Skill set